

**AMENDMENTS TO THE SPECIFICATION:**

Please amend the title on page 1, line 8 as follows:

**BACKGROUND ART DESCRIPTION OF THE PRIOR ART**

Please add the following on page 1, line 6:

desired time point or location to a virtual dynamic image of his or hers current knowledge status. Based on this image first a proactive dictionary can be supplied, which in advance identifies and translates useful, and to the specific user unknown, words or phrases; which then can be learned through the system and method. Secondly personalised, both as to the level of difficulty and the subject of interest of the specific user, learning and teaching content can be supplied.

Please make the following change on page 1, line 22:

planning efforts. This method finds application in a number of areas such as language interpreters learning, etc.

Please make the following change on page 1, line 23:

However, a drawback is that this method is ~~not dynamic, i.e. it is based on activity, i.e. a user has to use this method without interruption in time, otherwise problems will arise. Typically, the user cannot go back at a later point in time in an easy way i.e. the user knowledge cannot~~

be predicted static, as it is only based on user activity it will not give an accurate description of the user's current knowledge status after some time not working with the method. In this manner the user's knowledge cannot be predicted or estimated. In fact the flash card method does not take into account that knowledge deteriorates over time as proved by researchers like Ebbinghaus.

Please add the following paragraphs to page 2, line 19:

Moreover the language dictionary has not developed much over the last centuries. Of course today these can be found as products realised in a computer media. These stand alone computer programs distributed via CD-ROM or webclient based search applications, for example dictionaries sold in Sweden under the name Wordfinder, do increase the speed of look-ups and a possibilities for truncated searches etc. However these dictionaries do not offer anything more conceptually. Sometimes, or even often, there is actually a need to learn a word or phrase, which has been looked up in the dictionary. At the same time these dictionaries are only intended as reference and do not give any hints how central a term is in the language or in a vocabulary for a specified field.

Finally, known textbooks or computer based learning products do not offer any personalisation more than some level adaptation and the appearance of the graphical user interface, e.g. style or number, type or layout of functionality. This is a fact, while it is well known that motivation is very important for the impact of learning. This motivation stems to a great extent from reading and learning about things that are of interest and relates to the person learning. In other words, textbooks and other learning material of today do not offer personalised content.

Please make the following change on page 2, line 26:

user specific learning or teaching, whereby the system and the method estimate and/or

predicts a user's

Please add the following line on page 2, line 27:

knowledge in each point in time. The result is the system's ability to present a virtual dynamic image of the knowledge stats for the user in each point in time. This is not described by any of the prior art documents.

Please add the following line on page 3, line 20:

units with a stimulus and a reaction or set of reactions to said stimulus, typically as question/answer (Q/A) units.

Please make the following amendment on page 3, line 23:

for short term retention. Herein, "short term" is a period of time approximately within one day or less.

Please make the following amendment on page 4, line 12:

Yet another aspect of the invention is to provide an extraction tool for facilitating creation of questions and answers (Q/As).

Please delete the paragraph on page 4, lines 16 to 18.

~~Yet another aspect of the invention is to provide a tool for extracting individually adapted teaching and learning material. This tool is preferably adapted to be employed by a teacher, not a user.~~

Please add the following line to page 4, line 15:

Yet another aspect of the invention is to provide a tool for extracting teaching and learning material from large collections of texts or other data. Extraction selection is based on the compliance with personal preferences and the user's current knowledge status to create content tailored to the individual.

Please make the following change on page 5, line 25:

unknown word or phrase in the dictionary. In best case the user uses a software dictionary that will give a

Please make the following change on page 5, line 29:

words or phrases found while reading a media, e.g. the Internet, are automatically transferred for training.

Please add the following paragraph on page 5, line 30:

Further advantage is the possibility to let the system design tailor-made teaching and learning material based on vast text resources. The motivational aspect of using teaching and learning material, which is not only adapted as to the level of difficulty but also of personal interest to the user, cannot be exaggerated.

Please make the following change on page 6, line 21:

controlling the learning system is connected to (or distributed in) a communication network 3, in

Please make the following change on page 6, line 22:

this case the Internet, typically by means of a web-server {not shown because of simplicity}.

Please make the following change on page 6, lines 27 to 30:

on requirements, which are typically user specific. Thus, the term “communication network” includes one or more networks of any suitable type. As illustrated in Fig. 1, user terminals 4 {of which only one is shown because of simplicity}, which can be mobile are connected or connectable-{illustrated by a double-headed arrow} to the communication network 3.

Examples of

Please make the following change on page 7, line 5:

To the apparatus 2 a content data base 5 is connected {or connectable}. The content data base 5

Please make the following change on page 7, line 9:

application layer by means of a software-only solution {illustrated by a dashed line} comprises a

Please make the following change on page 7, lines 10 to 11:

number of means to be able to extract data from the content data base 5, providing services {such as learning etc.} to the user of system 1.

Please make the following change on page 7, line 16:

block diagram showing the functional means, comprises means for identification 6 ~~for identification and/or~~

Please make the following change on page 7, line 19:

output data. The features of this means for identification 6 will not be described in more detail in the following,

Please make the following change on page 8, line 14:

connected (via a communication network such as the Internet) to the system data base comprising

Please make the following change on page 7, lines 23 to 25:

wherein a cluster of servers operates against several, (typically a large number of), user profiles, ~~(another way of describing it better~~ where the user profiles also could be to regarded ~~the user profiles as "accounts")~~, on-line or

Please add the following paragraphs to page 9, line 4:

Learning states

In the system data base 10, a number of subjects comprising Q/A:s are stored together with statistical information. This system data base 10 can also store information about user profiles, i. e. individual information such as statistical information and the fact that each Q/A has a current type of learning state, which is another term for knowledge

status, for example but not limited to these types: “not learned”, “test required”, “repetition required”, “estimated as knowledge”, “knowledge” or marked as “knowledge not further checked”

### Short term learning cycle

Please make the following change on page 9, line 6:

typically comprises a Q/A. In a “training” mode, (for instance off-line), the interface 12 shows an

Please make the following change on page 9, lines 9 to 11:

such as sound or video could be employed as a question. It is obvious for the skilled person that it (It is also possible to invert the Q/A to an answer/question (A/Q) instead, but this will not be further described, since it is similar to a Q/A). The use evaluates the question and thinks of an appropriate answer, typically without

Please make the following change on page 9, line 13:

Thereafter, (or simultaneously), the learning tool 11 presents an answer. It could also be possible

Please make the following change on page 9, lines 16 to 17:

require more processing power. Correct and wrong answers (typically evaluated by the user) and other data on current knowledge is then stored for each Q/A, typically in a

memory 23 of the learning tool 11 {This storage is not

Please make the following change on page 10, line 14:

generation<sub>1</sub> {typically provided by means of a random generator}<sub>1</sub> could be used as a variable

Please make the following change on page 10, lines 17 to 18:

system<sub>1</sub> {typically set to be the administration means 7 in the apparatus 2 in Fig. 2}, this Q/A is transferred to the system data base 10 and is marked as ~~learned~~ “knowledge” for the user at a certain time point and an associated variable  $T_{\text{next test}}$  being the time to which the user has to answer this question again, is thereby updated.

Please make the following change on page 10, lines 27 to 28:

two or more consecutive questions are similar, for instance, {if similar pronounced, spelled or if they have similar content.} Further filters could also be implemented in this filter tool.

Please make the following change on page 10, line 30:

The learning tool 11<sub>1</sub> {or the system 1}<sub>1</sub> may also be provided with a feature providing subsets of

Please make the following change on page 11, line 1:

user. The learning tool 11<sub>1</sub> {or the system 1}<sub>1</sub> may also comprise a tool for learning according to a



Please make the following change on page 11, lines 2 to 3:

target level and a tool for measuring learning speed, rate of learning. In a user profile (typically provided in the system data base) there can be a measuring profile linked to a specific user and/or

Please make the following change on page 11, line 4:

subject of interest. The measuring profile stores the dynamics of the changing learning states of the Q/A:s, e.g. how many Q/A:s that are learned for a particular time period.

Please make the following change on page 11, line 10:

#### Long Term Learning Cycle

Please make the following change on page 11, lines 11 to 12:

The learning tool 11 may also be connectible to a test and repetition tool 19 for optimized repetition. This test and repetition tool 19 can also be implemented in the learning tool 11, but in this case typically provided with a limited functionality, whereby data is stored in the learning tool for further transfer tot he apparatus at a later stage.

Please make the following change on page 11, line 14:

later stage. A point of time when a Q/A is marked as ~~learned~~ "knowledge" for a particular user is stored within

Please make the following change on page 11, line 15:

this test and repetition tool 19. The time  $T_{\text{next test}}$  to which the user has to answer this question again, i.e. to be able

Please delete lines 16 to 21 on page 11 and replace with the following:

to control his knowledge is controlled by this test and repetition tool 19. If no repetition or test is made to prolong the time  $T_{\text{next test}}$ , then the point in time  $T_{\text{next test}}$  expires, and the state of the Q/A is changed from "knowledge" to "test required". If no test is done by the user the virtual dynamic image of his acquired knowledge in the system deteriorates over time until all Q/A marked as knowledge changes state to "test required", meaning that the system database 10 can be considered dynamic. At a point in time when test of a Q/A is performed by the user through the test and repetition tool 19 the Q/A question is posed to the user. If the answer to this question is wrong, this Q/A changes state to "repetition required". When repetition has been duly performed using the short term learning cycle, the time period  $T_{\text{next test}}$  until the time point when this question must be tested again, is extended by a lower factor, say a factor zero point eight (0.8). If, on the contrary, the Q/A is correctly answered at a test, the state of the Q/A changes to "knowledge" and the time period  $T_{\text{next test}}$  until the time point when this question must be tested again, is extended by a higher factor, say a factor two (2). If time has passed between the  $T_{\text{next test}}$  expired and the user started the test for the Q/A, this time is added to the  $T_{\text{next test}}$  before the extension factor is applied. When this time period  $T_{\text{next test}}$  is longer than a predetermined time period, this Q/A is marked as "knowledge not further checked", but still kept in the system.

Please delete line 23 on page 11 through line 14 on page 12 and replace with the

following:

The test and repetition tool 19 may also select a number of Q/A marked as “estimated as knowledge” in the diagnosis tool 20 to be included for testing. Correctly answered these are marked as “knowledge”. If incorrectly answered these change state from “estimated knowledge” to “repetition required”.

#### Diagnosis tool

Each subject has a general structure accessible for each user profile. The learning tool 11 receives information for each subject to be used for Q/A:s intended for learning. Each Q/A has its own hierarchical number, which the administrator decides based on parameters such as how frequent a question is, how useful and how relevant data is to decide how Q/A:s should be presented to a user. The numbers are different for different users, but also a general structure may exist. A typical example of the general structure is for instance: In subject Swedish/English the question/answer “gå/walk” will have a lower number than question/answer “bank charter/bankoktroj”. A typical example of a user related structure is separation into dynamic subsets for different users. For instance, for a user category of shippers, words or phrases concerning maritime terms are of greater importance than for a group of conventional users. Similarly, for Swedish users learning English, for instance the term “midsommarstång” (maypole) is of greater importance than for German users learning English. Hence the difference in hierarchical structure in the content data base.

Please add the following phrase to page 12, the end of line 22:

by assigning the learning state "estimated knowledge" to all identified used words and phrases.

Please add the following line on page 12, line 23:

Tool for Facilitating Creation of Q/A:s

Please add the following clause to page 12, line 28:

questions of the system data base10 and extracts a number of questions for which questions shall remain (without a

Please replace on page 13, lines 3 to 7 with the following text:

either known to the system and stored in a database, or previously unknown to the system, but now introduced by use of a graphical or programmatical interface,) for instance a page on the Internet, or typically a large number of pages, could be checked, (matched against the Q/A marked as "estimated knowledge", "knowledge" or "knowledge not further checked".) to a user's profile to look up words or phrases , which are not known by the user, (or in other terms: which are above a user's current level of skill,) to be able to present Q/A:s simultaneously as while the user is reading the text. These words or phrases could then be presented at the same speed, (or any other suitable speed,) as the user reads the text.

The dynamic system could also simulate a static system by deactivating the parameters, which simulates the deterioration of the user's knowledge. Also the virtual image of a specific user's knowledge could be replaced by a static database or model of general user types.

The simultaneous presentation of unknown Q/A:s gives the user the ability to very rapidly be able to read and understand texts on specific fields of knowledge enhancing further the ability to establish knowledge within the same fields.

Please make the following change on page 13, line 11:

The user may also deselect already selected words or phrases, and add selected words or phrases to the selection.

Please add the following on page 13, line 12:

Extraction of Personally Tailored Learning Material

Please make the following change on page 13, lines 19 to 20:

words phrases or other learning items of different learning states can be tolerated, say five percent (5%) or any other absolute number or share of new {unknown} words, phrases or other learning items of different learning states depending on the tolerance level of the user.

Please add the following paragraph on page 14, line 7:

It will be understood that the invention is not restricted to the aforescribed and illustrated exemplifying embodiment thereof and that modifications can be made within the scope of the inventive concept as illustrated in the accompanying Claims.

Please add the following line on page 15, line 2:

What is claimed is: